



Pacific Island Network News

Newsletter of the
Pacific Island Network
Inventory & Monitoring Program
July-Sept 2005, Issue no. 01

2 Coordinator's Columns

The Inventory and Monitoring Program invites you to enjoy our inaugural quarterly newsletter. As we complete an ambitious program of 52 inventory projects, we are both grateful for and boggled by the diversity of nature's presence in the Pacific. By communi-

4 Notes from the Field

The herpetological inventory (reptiles and amphibians) in Hawaii parks was developed in order to determine which species of amphibians and reptiles have established populations on park properties in Hawaii, and if any of the species present pose a marked threat

6 Featured Resource - Hawaiian Hoary Bat

The hoary bat (*Lasiurus cinereus semotus*) is the only terrestrial mammal native to Hawaii. Ancient Hawaiians

Inventories...3

Data Management...3

Monitoring...4

Network Staff...4

Games Corner...5

Program Update & Calendar...5

Green Sand Beach along the Ala Kahakai National Historic Trail, island of Hawai'i.

About this Newsletter

Hello. Aloha. Talofa. Hafa adai. Konichiwa.

These are just some of the many greetings from the Park Service's farthest flung network spanning a large swath of the the Pacific Ocean.

Welcome to the Inventory and Monitoring Program (I&M), Pacific Island Network's (PACN) inaugural newsletter. We hope you enjoy this scintillating news and commentary about the PACN I&M program and our findings. Our parks range in focus from nationally protected

natural areas to historic sites and war memorials. With this newsletter we aim to share with you a brief glimpse of the work that we do in and for America's National Park's in the Pacific.

This publication is for everyone. However, is intended for a broad audience including the PACN Board of Directors, Technical Committee, Park Service staff, and program cooperators such as those involved in conducting inventories, preparing monitoring protocols, or collaborating on numerous projects. Be sure not to miss the last page which highlights a 'featured resource' intended to provide an integrated and concise overview of one of the many resources the NPS strives to preserve and protect – in part through inventory and monitoring.

The content of the newsletter includes pro-

grammatic updates of the general administration of the Inventory and Monitoring Program and the PACN. Specific information will be included in each issue for the three main thrusts of the program: inventories, monitoring, and data management. Additional materials will be added based upon your feedback.

We welcome your contributions and encourage your feedback! If you have items to contribute, including a brief article, or a resource you would like to see featured, please let us know.

A hardcopy of this quarterly newsletter is mailed to each Park Superintendent in the network, and an email distribution list is also in use. Past issues will be available on our website. If you would like to modify the way you receive this newsletter, please let us know. We hope you enjoy our first newsletter!

You can contribute to this newsletter! Please let us know of topics you think we should include, or if you have material to contribute.

Greetings from Leslie

Aloha and Welcome to the Pacific Island Network! —The PACN spans from Kilauea's summit to the limestone forests of Guam, and finally to the coral reef lagoons of American Samoa. We encompass 11 crown jewel Pacific Island National Parks (see map). These Parks are part of the National Park System that is intended to preserve and protect natural and cultural resources for and by the American people. The I&M Program is privileged to help with the preservation and protection in our 11 Parks through studying and documenting the plants, animals, and natural processes that make the Parks a living laboratory for scientists and the public. We invite you to visit and explore our National Parks.

Ā Hui Hou,

Leslie HaySmith, Ecologist & PACN Coordinator



National Park Service
U.S. Department of the Interior

Pacific Island Network
P.O. Box 52
1 Crater Rim Drive - Qtrs 22
Hawaii National Park, HI 96718



Hawaii-Pacific Islands Cooperative Ecosystem Studies Unit
University of Hawaii at Manoa
3190 Maile Way, St. John Hall #408
Honolulu, HI 96822-2279

The National Park Service has implemented natural resource inventory and monitoring on a service-wide basis to ensure all park units possess the resource information needed for effective, science-based management, decision-making, and resource protection.

Network Coordinator
Leslie HaySmith

Contributors
Pacific Island Network Staff
Hawaii-Pacific Islands CESU Cooperators

Comments? Write to:
Cory Nash
Pacific Island Network
P.O. Box 52
Hawaii National Park, HI 96718
Phone: 808-985-6185
Fax: 808-985-6111
Email: corbett_nash@contractor.nps.gov
web: <http://science.nature.nps.gov/im/units/pacn>

Mailing List
Please pass this newsletter on to interested parties. To be added to or removed from this mailing list, please contact Cory Nash at corbett_nash@contractor.nps.gov.

The National Park Service cares for the special places saved by the American people so that all may experience our heritage.

Coordinator's Column — Introduction to Program

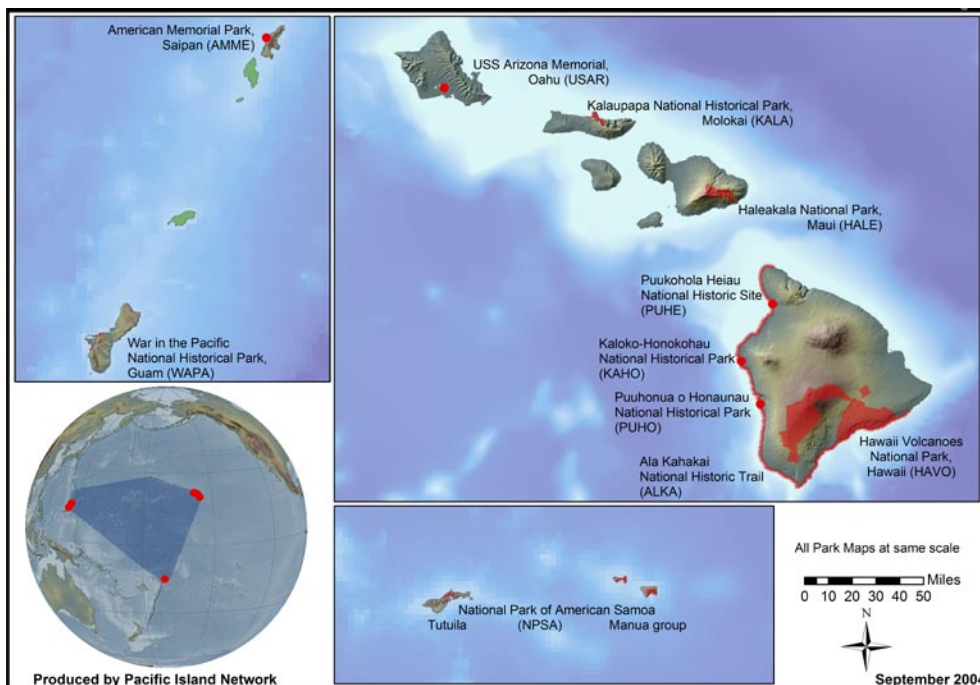
Hafa adai (Aloha in Chamorro)! The Inventory and Monitoring program invites you to enjoy our inaugural quarterly Newsletter. As we complete an ambitious program of 52 inventory projects, we are both grateful and boggled by the diversity of nature's presence in the Pacific. By communicating through this newsletter, our Pacific Island collaborators and partners can remain apprised of the I&M Program activities, schedules, and plans for monitoring natural resources in our 11 National Parks.

The charge of our Program is to help preserve and protect the unique features of the National Parks in Hawaii, Guam, Saipan, and American Samoa. Planning for long-term monitoring in these National Parks is underway. It will span a diverse array of Park features such as: caves, native and invasive plants, coral reefs, seabirds, marine fish, anchialine pool fauna, flying foxes, erosion, water quality, climate, forest birds, land use, and views. We are enthusiastic as we chart our course for this huge monitoring endeavor over numerous ecosystems and spanning the Pacific.

As the I&M Network Coordinator, I have the privilege of working with many highly dedicated folks, who are deeply committed to

conservation and management of the unique flora, fauna, and the landscape of our Islands. Whether it be in the newly annexed Kahuku ranch (HAVO) with old growth Koa and rare pit craters, or standing on the edge of the tragic WWII landing beaches on Guam and Saipan (AMME and WAPA), or perhaps snorkeling in the aquarium-like coral reef at Kaloko-Honokohau, we work together toward a common goal to preserve the natural wonders in our care. We face our glory and our challenge: our joy in the song of an 'ākepa, and pure grit required to study and eradicate the agents of the 'ākepa's demise (e.g., mosquitoes, exotic pests, invasive plants). So with much gratitude, I want to thank the many dedicated people that work with I&M including: Network/Park staff, CESU/PCSU Cooperators, USGS, Bishop Museum, and many others who overcome obstacles as we wind our way to a better understanding of Pacific Island ecosystems and its spectacular biota and land and sea scapes through the nebulous efforts known as monitoring. It takes vision to persevere, as Henry David Thoreau said: "In wildness is the preservation of the world."

With aloha, Leslie.



Map of the Pacific Island Network and its 11 NPS units.

Inventories

The I&M program has identified core inventory information that is needed to effectively address park planning and management needs. This information falls into the following categories:

- Air Quality
- Climate Information
- Base Cartography
- Geological Information
- Water Resources Information
- Soil Resources Inventory
- Vegetation Mapping
- Natural Resource Bibliography
- Biological Inventories

Biological inventories provide baseline data for future comparisons, and aid in creating species lists of the biota found within park boundaries. Priority biota groups include:

- 1) vascular plants
- 2) vertebrates
- 3) federally and state listed threatened and endangered species

Biological Inventory by Type	HAVO	PUHE	PUHO	KAHO	KALA	HALE	ALKA	WAPA	AMME	NPSA	USAR
Plants											
Vascular plants	X					X		X			
Ethnobotanical inventory										X	
Native plant mapping		X	X								
Moss (bryophytes)	X										
Vertebrates											
Seabirds/Shorebirds	X	X	X		X	X	X*			X	
Passerine birds	X				X	X	X*				
Bats	X	X	X	X	X	X	X*				
Reptiles and amphibians	X	X	X	X	X	X	X*				
Alien mammals					X	X					
Nearshore vertebrates		X	X		X	X	X*				
Historic vertebrate pest data	X										
Invertebrates											
Shrubland Invertebrates						X					
Target taxa	X										
Invertebrate Species of Concern	X										
Habitat/multiple species											
Incipient Invasives	X										
Anchialine pools	X	X	X	X			X*				
Streams/Lakes					X	X					

Biological inventories conducted in the PACN 2000-2005. X* for ALKA indicates inventories were conducted in parks connected by this trail.

4) species of special concern

The objective is to document at least 90% of species within the targeted groups, and to provide as much information as possible on distribution and abundance. Inventory data are

collected and maintained in accordance with clearly defined protocols and quality-assurance standards. The data are being entered into Service-wide NPS data bases (e.g. NPSpecies and NatureBib) and reports will be made available to the public in the near future.

Data Management

The PACN Data Management Plan is underway and it describes the network's overall data management strategy. The plan will include Standard Operating Procedures for tasks such as use of GPS units, upload of GPS data to GIS software, document scanning, data verification/validation methods, database documentation guidance, and metadata creation standards. The plan will be submitted for program review by December 2005.

The PACN will continue to utilize the national I&M program's on-line data servers for distributing data and information, including the Pacific Island Network webpages. Data products from periodic PACN monitoring data summaries will be available to the parks via our wide-area computer network. Additionally, associated metadata will be available to both the parks and the public via the national I&M program's on-line data stores. Built-in database tools allow sensitive records to be flagged, and only non-sensitive data will be made available to the public.

PACN data management also emphasizes the certification of NPSpecies records. NPSpecies is a species information database for all National Park Service units. It is a product of the I&M program's Biological Inventory, which aims to document 90% of the vascular plant and vertebrate species found in network parks. For each species, NPSpecies shows taxonomic details, common names, and information on its status in each park including abundance, residency, nativity, and cultivation history. Because we received Biological Inventory funds only for the Hawaiian island parks, we only included the eight Hawaii parks for current NPSpecies certification. Certification for parks outside of Hawaii and for other taxa groups (non-vascular plants and non-vertebrates) has begun, and we hope to complete them in 2006.

NPSpecies certification is a quality assurance process undertaken by taxa group (vascular plants, mammals, fish, birds, etc.). After review by a taxa group expert, each batch of records is submitted to the national I&M program for

upload to the on-line NPSpecies database. To date, NPSpecies has been available only as a password-protected version, but release of the public version is forthcoming. Only certified records will be viewable to the public.

Database Products

Databases completed and in use:

- ◆ WAPA Reef Sedimentation Monitoring database
- ◆ KAHO Sea Turtle Monitoring database
- ◆ Species Observation database
- ◆ Image database (with ThumbsPlus! software)
- ◆ HALE Small Mammal Trapping database
- ◆ NPSA Fish Survey database
- ◆ KALA Small Mammal Survey database
- ◆ Various inventory databases (amphibians/reptiles, bats, seabirds, lowland birds)

Databases in progress:

- ◆ HALE-HAVO Petrel Monitoring database
- ◆ HALE-HAVO Nēnē Monitoring database
- ◆ HAVO Cave Cultural/Natural Resource database
- ◆ Voucher Specimen database (import collection records to both NPSpecies and ANCS)

Monitoring

As the influence of human activities on our planet's natural resources increases, we have begun to recognize that natural resource monitoring is critically important to properly manage complex natural systems.

In 1999, a major program to improve the scientific management of National Park resources called the Natural Resource Challenge (NRC) was launched. With funding from the NRC and the Park Service, the I&M Program is designed to monitor natural resources consistently across multiple parks over many years, as well as integrate information gained from pre-existing monitoring programs.

The I&M Program focus is on monitoring "vital signs", key natural resources or processes that provide important information about park

ecosystems. The I&M Program is emphasizing two important points in developing standard monitoring protocols for these vital signs: 1) the protocols must be scientifically rigorous and be able to provide useful information in the long term, and 2) information collected during monitoring must be managed and reported in order to provide access to the widest possible audience.

The I&M Program has also identified other high-priority vital signs not currently scheduled to be monitored. These indicators are important for understanding the condition of park ecosystems, but are beyond our program's funding ability at the moment. We hope that by identifying these priorities we will encourage parks or external agencies to seek out other sources of funding to monitor these resources,

and take advantage of our experience to develop long-term monitoring methods.

With assistance from our cooperators, partners, and NPS employees, the Pacific Island Network's Monitoring Plan synthesizes three levels of monitoring: pre-existing monitoring, I&M funded vital signs, and unfunded needs. Our complete Monitoring Plan will outline the entire monitoring program; from study design and data collection methods, to data storage and cross-compatibility, and finally to strategies to report monitoring results to federal, state, and territorial agencies and the general public. We believe that this program has the potential to provide an effective and long-term framework for scientifically informed natural resource management for the NPS and other agencies for decades to come.

Notes from the Field

The herpetological inventory (reptiles and amphibians) in Hawai'i parks was developed in order to determine which species of amphibians and reptiles have established populations on park properties in Hawaii, and if any of the species present pose a marked threat to native Hawaiian ecosystems. So far we have surveyed three national parks on the west side of the Big Island – Pu'uuhonua o Hōnau, Kaloko-Honokōhau, and Pu'ukoholā Heiau. While the majority of the herps that we encountered during the surveys are familiar to most Hawaiian residents, I noticed that one particularly seldom-seen species was found often at PUHE: a blind snake (*Ramphotyphlops braminus*), usually located low on the trunks of kiawe trees.

The blind snake is one of two species of snakes found in Hawaii, the other being the yellow-bellied sea snake, a rare visitor to Hawaiian waters.



A juvenile blind snake found at night in Pu'ukoholā Heiau National Historic Site.

The blind snake usually goes unnoticed due to its burrowing lifestyle and its superficial resemblance to worms. Before working at PUHE my only encounter with a blind snake was the unexpected emergence of an individual through a crack in the tile of my bathroom floor. Due to the scarcity of tile floors at PUHE, I decided to venture into habitats slightly less anthropogenic. Within the unfamiliar environment of PUHE I was forced to base my search strategy on secondhand accounts more relevant to my surroundings. Based on these accounts I expected to find blindsnakes beneath potted plants in wet, shaded gardens — so to find the snakes climbing trees in dry, dusty soil was a real surprise.

This pan-Asian fossorial species of snake was introduced to Hawaii around 1930 from the Philippines. An unusual characteristic of the blind snake is that it is the only known species of snake to be parthenogenic; that is, all members of this species are female.

—Submitted by Jason Bazzano

Network Staff

Featured Staff: Leslie HaySmith, ph. (808) 985-6180 NPS Pacific Island Network I&M Coordinator

Dr. HaySmith has been working with PACN Inventory and Monitoring for over one year. She came to the Park Service from the Forest Service where she worked as Wildlife Biologist, Environmental Ed. and Outreach/Partnership Liaison. Leslie received a PhD from the University of Idaho and MS from the University of Florida where she nourished her life-long commitment to conservation and environmental education work in the US, Belize, and Costa Rica. She lives on the Big Island of Hawai'i with her husband and three children.

Other Staff: Ph. (808) 985-*plus number below (HAVO)

Fritz Klasner — NPS Ecologist, *6181
Gordon Dicus — NPS Data Manager, *6182
Allison Cocke — NPS Database Programmer, *6186
Viet Doan — Ecological Monitoring Spatial Data Associate, *6184
Corbett Nash — Program Facilitator/Support Assistant, *6185
Jean Franklin — Landscape/Vegetation Research Facilitator, *6187
Kelly Kozar — Inventory Coordinator, *6183
Karin Schlappa — Inventory Coordinator, *6183
Gail Ackerman — Vertebrate Fauna Research Facilitator, *6189
Charlotte Forbes Perry — Ecological Monitoring Database Facilitator *6188
Page Else — W. Hawaii Ecological Monitoring Database Facilitator ph. (808) 882-7218 (PUHE)
Kimber DeVerse — Water Quality Research Facilitator ph. (808) 392-6881 ext. 210 (KAHO)
Raychelle Daniel — Marine Research Facilitator ph. (808) 541-2693 ext. 732 (PWRO)
Sonia Stephens — Natural Resource Monitoring Specialist ph. (808) 541-2693 ext. 731 (PWRO)
Rise Hart — Ecological Monitoring Database Specialist ph. (684) 633-7082 (NPSA)

NPS Ecologist and PWR Science Advisor:

Darcy Hu *6092

Program Update

PACN staff met with the Technical Committee and National Program Leader, Steve Fancy, to strategize for the protocol development phase of the Monitoring Plan. Steve discussed how and why vital signs monitoring and the networks have become the “poster child” for the Natural Resource Challenge and future budget initiatives. Steve also introduced some perspective on how monitoring results will be used by the parks for performance management, the new Department of Interior Land Health Goals, development of Desired Future Conditions, and Resource Stewardship Planning.

The Principal Investigators for protocols left with a better understanding of the steps required in the planning process and timelines for the I&M Program needs. After the meeting, the Principal Investigators did an excellent job of working on draft study plans for all the protocols, which allowed PACN staff to complete task agreements and finalize schedules and

budgets for protocol development. The Principal Investigators are now working on the study plans and Protocol Development Summaries, with assistance from our hard-working CESU facilitators. The network wants to extend a note of thanks for all the Principal Investigators and NPS staff facilitators who have made time in their busy schedules to work on these demanding projects.

The PACN is working with statisticians to assist with the challenging process of coordinating the network sampling scheme and the sample designs for the 25 protocols to be developed. We will hold a workshop at the end of August with both statisticians and Principal Investigators to jump-start this task (see the Calendar below). The statisticians’ assistance will be invaluable in helping us move forward with this crucial phase of developing our Monitoring Plan.

Calendar — July-December

July 11-12	Hawaii Ecosystems Project meeting, Kea'au
July 28-29	Hawaii Conservation Conference, Honolulu
Aug. 8-12	Pacific West Region Network Coordinators meeting, Seattle
Aug. 18	First draft: Monitoring Plan, Chapters 5-8. Submitted to Pacific West Regional office
Aug. 22-26	Sample design meeting workshop, Hilo
Aug. 31	Reporting by Principal Investigators for Administrative Annual Report and Workplan (AARWP)
Sept. 8	Complete Draft of Phase 3 report (Monitoring Plan) due to Pacific West Regional office
Sept. 14	I & M 'After Dark in the Park" program at Pu'uuhonua o Hōnaunau / Kaloko-Honokōhau NHPs
Oct. 8	Administrative Annual Report & Workplan (AARWP) due to Pacific West Regional office
Oct. 11	I & M "After Dark in the Park": program at Hawai'i Volcanoes NP
Oct. 28	Complete draft Phase 3 report (Monitoring Plan) to peer reviewers with budget
Oct. 31	Complete draft Phase 3 report (Monitoring Plan) internal review
Dec. 13	Entire Phase 3 report (Monitoring Plan) due to Washington, DC office
Dec. 31	First protocol submitted for peer review


Games Corner

"Wrasse Wrestling"


At one time it was thought that adult and juvenile, as well as male and female wrasses were separate species. Match the "terminal / adult" phase wrasse along the right column with the "initial / juvenile" phase wrasse along the left column.

Did you know that terminal phase wrasses are always male?


Answers are below:




1




2




3




4




5




6




7




A




B




C




D



E



F



G

Sunset Wrasse 1 - D
Lined Coris Wrasse 2 - F
Yellowstripe Coris 6 - B
Yellowtail Coris 7 - E
Rockmover Wrasse 5 - A
Pearl Wrasse 3 - G
Psychodelic Wrasse 4 - C



Hawaiian Hoary Bat — 'Ope'ape'a

Description: The Hawaiian hoary bat (*Lasiurus cinereus semotus*) is the only terrestrial mammal native to Hawaii. Ancient Hawaiians called this solitary and elusive bat 'Ope'ape'a, as its wings reminded them of the half-leaf remaining on a taro stalk after the top half has been removed for cooking. Although present in Hawaii for many centuries, the earliest recorded sighting was December 8, 1816, when one was shot near Pearl Harbor, O'ahu. It is believed the Hawaiian hoary bat is a relative of the North American hoary bat, which originally migrated at least 2000 miles from the mainland.

This Hawaiian subspecies is distinctly small at 12-20g. They are typically a mixture of dark browns and grays, tinged with silvery-white, which produces a grizzled or "hoary" effect. This bat may also exhibit reddish hues. Similar to other *Lasiurine* species, the Hawaiian hoary bat is covered in thick fur over its entire body and dorsal surface of the tail membrane.

The hoary bat has been observed in essentially every habitat type in the Hawaiian Islands, making it difficult to associate them with particular habitats. It is presumed to be a solitary foliage rooster, but some bats have been observed using man-made structures, lava tubes, and rock cracks and crevices. Hawaiian hoary bats use echolocation to locate insect prey. They will consume both native and non-native insects, including beetles and moths.

Inventories: Hawaiian hoary bats were historically found on all main islands, but today the largest populations are believed to occur on the islands of Hawai'i and Kaua'i. Currently, researchers are using MiniBat-III acoustic detectors to determine presence of bats in Hawaiian National Parks. This includes Haleakalā NP, Maui, and Kalaupapa NP, Moloka'i, as well as the Big Island's Hawai'i Volcanoes NP, Pu'uuhonua o Hōnaunau NHP, Kaloko-Honokōhau NHP, and Pu'ukohola Heiau NHS.

Monitoring: Development of a monitoring protocol for this subspecies is currently in progress. Monitoring techniques will be researched and tested during the next year,

in order to complete a monitoring protocol in 2007. Monitoring objectives will focus on assessing presence and distribution of bats in the Hawaiian National Parks, relative levels of bat activity and occurrence, and general habitat associations.

Data: The 'Ope'ape'a has been documented in NPSpecies for most of Hawaii's National Parks. A Hawaiian hoary bat recovery plan was developed by the U.S. Fish and Wildlife Service, which seeks to downlist this species after selected populations have remained stable or increasing for 5 consecutive years. The State Department of Land and Natural Resources maintains a Hawaiian Hoary Bat Research Cooperative in partnership with the US Geological Survey, non-profit organizations, and private landowners.

Status & Trends: The Hawaiian hoary bat was listed as an endangered species in 1970 and is presently protected by both federal and state laws. Population estimates have ranged from several hundred to a few thousand individuals, but these numbers are based on anecdotal and incomplete data. To date, research addressing real population numbers has not been conducted. Before this subspecies can be considered for downlisting to threatened status, more

accurate knowledge of distribution, relative abundance, and habitat needs will be required.

Management: Due to limited and conflicting information regarding Hawaiian hoary bats, critical habitat for this subspecies has not yet been designated. As a result, even the most basic management strategies are difficult to implement. Threats to this species remain unclear, but habitat loss, pesticide use, predation, and roost disturbance are primary concerns. Future research is needed to identify and protect critical roosting and foraging habitat, control predators, and assess other threats.

For Questions or Comments Contact:
Heather Fraser at: (808) 985-6188

Where to see bats:

During summer months, visitors to the Big Island can observe hoary bats foraging over the ocean at sunset at Pu'uuhonua o Hōnaunau NHP. In Hawai'i Volcanoes NP, bats can be seen at Waldron Ledge overlook and along Mauna Loa Strip Road. Hotspots in Maui's Haleakalā NP include Hosmer's Grove and 'Ohe'o Gulch, while those trekking to the top of Kalaupapa NHP's Pali Trail may get a glimpse of them. If acoustic bat detectors are available, tune the device to ~30kHz to eavesdrop on the bats' "echolocation conversations".



The Hawaiian Hoary Bat has been described by some as the teddy bear of North American bats. This one is chomping on a mealworm.

Photograph courtesy of the Honolulu Zoo, with permission.